

Research Training Implementation Plan

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Research Training Implementation Plan Overview

On 14 April 2016, the Minister for Education and Training launched the *Review of Australia's Research Training System* (the Review) by the Australian Council of Learned Academies (ACOLA). The Review concluded that Australia continues to derive economic, social and environmental benefits from a research system that is world class in many respects and that contributes substantially to the world's stock of knowledge. However, the Review also concluded there is scope to improve higher degree by research (HDR) training practices, particularly to engage with the industry sectors employing HDR graduates to increase the skills, knowledge and abilities of our future workforce.

The Review noted that improvements to Australia's HDR training system would need to be delivered by the higher education sector in collaboration with government, industry and community stakeholders. The Review made 11 key findings that articulate areas for improvement (Appendix A) and six recommendations for government action (Appendix B).

On 4 November 2016, the Australian Government announced it had accepted all six Review recommendations. In response to Recommendation 1, the Department of Education and Training (DET) established a cross sectoral implementation working group to develop a specific and actionable Implementation Plan (the Plan) in response to the Review's findings.

The working group deliberated between February and July 2017. It was chaired by Professor Robyn Owens and comprised high-level representatives from the higher education, government and industry sectors, including Indigenous and HDR student representatives.

Monitoring and reporting on implementation

To ensure that the agreed actions are implemented effectively, DET will work with the identified lead organisations for each of the 18 agreed actions to monitor and report on progress. Drawing on updates from the relevant lead organisations, DET will prepare and publish six-monthly progress reports on its website commencing on 1 July 2018 until the agreed actions outlined in the Plan have been implemented. In addition, DET will collate and publish a range of data on the performance of the HDR system, as outlined in various parts of the Plan.

Priority issues

The working group developed 18 actions to address the Review's findings. These actions are arranged under five Priority Issues in the Plan:

1. Pathways to HDR training
2. Industry-university collaboration, including placements
3. Equity, including Indigenous participation
4. Quality of the HDR training system
5. Data and evidence to better monitor HDR system performance.

Priority Issue 1 – Pathways to higher degree by research training

Goal

To remove the regulatory and financial barriers that prevent universities from developing innovative and internationally recognised entry pathways to HDR training that would better prepare candidates for HDR training (Finding 2), and to increase flexibility for universities in using HDR training funding (Finding 3).

There is strong consensus in the sector on the need for universities to continue to provide flexibility in their HDR training pathways to support students from a diversity of backgrounds to receive adequate preparation for HDR training. This includes universities offering multiple pathways to HDR training and providing sufficient information on each to prospective HDR candidates.

Existing initiatives

There is considerable flexibility within existing regulatory and government funding frameworks to support a range of HDR pathways, and universities continue to develop new models to support preparation for entry into HDR training. As well as supporting PhD training, the Research Training Program (RTP) recognises and supports Masters by Research degrees, which can be undertaken as a qualification in their own right, or as a pathway to PhD training.

An example of a recently established model is the hybrid Bachelor of Philosophy/Master of Research program, first offered by Macquarie University, a two-year degree that includes both coursework and independent research study. The program is intended to provide students with adequate preparation for HDR training and aligns with the internationally recognised Bologna three-cycle model. The hybrid Bachelor/Master of Research model is eligible to receive Commonwealth Grant Scheme (CGS) funding in year one and RTP funding in year two. Western Sydney University and the University of Wollongong have also recently adopted similar degree programs that qualify for CGS and RTP funding.

Other universities have established Graduate Diploma in Research programs, supported by FEE-HELP, and PhD (Integrated) programs, and are also eligible for RTP funding. These programs are in addition to a range of existing qualifications.

New research block grant (RBG) arrangements, announced by the Government as part of the National Innovation and Science Agenda, came into effect on 1 January 2017. The RTP established under the new arrangements provides universities with greater autonomy and flexibility in selecting students and managing research training funding to support scholarships and training pathways. It replaces the three previous RBG schemes that supported HDR training (Australian Postgraduate Awards, International Postgraduate Research Scholarships and the Research Training Scheme), which included prescriptive eligibility criteria varying across each program.

The CGS continues to support pathways to HDR through supporting Honours and some Postgraduate Coursework degrees. In the 2017–18 Federal Budget, the Government announced a range of changes to the way it financially supports the higher education system. Specifically, the Government announced that Commonwealth supported postgraduate coursework places will be allocated directly to students from 1 January 2019 (subject to the passage of legislation) rather than to universities, as is currently the case. Under the proposal, approved students will be provided with scholarships that they will be able to use at the institution of their choice. The Government will consult stakeholders in 2017 on the detailed design of the new scholarship system, including on the method to be used to select students to receive scholarships and the courses that scholarship allocations should prioritise.

On 3 May 2017, as part of broader higher education reforms, the Government announced a review of the Australian Quality Framework (AQF). The AQF provides the basis for differentiating between Masters by Research and Masters by Coursework degrees and therefore which courses are recognised in the RTP funding formula. The review process will be completed by 31 December 2018.

Areas for improvement

The Review suggested:

- the Honours degree, as the dominant entry qualification for HDR training in Australia, may not be adequately preparing students for HDR training and is not internationally recognised
- work experience is not adequately recognised by the research training system
- funding arrangements limit the establishment of a research training coursework-and-thesis masters degree.

Of candidates commencing HDR training in 2015, 45 per cent entering a PhD and 20 per cent entering a Masters by Research program held an Honours degree as their previous highest qualification. The qualifications mix held by candidates entering PhD training remained steady between 2011 and 2015. However, for Masters by Research commencements, the number of students with Honours qualifications has declined over the same period, with the majority of students entering with a Bachelor degree (39 per cent in 2015).

Support for a research training coursework masters degree

The Review raised concerns that a Commonwealth funded research training coursework masters degree (ACOLA preferred model) could not be supported within existing regulatory and funding arrangements. The purpose of the ACOLA preferred model is to provide a two-year entry pathway to HDR training that aligns with the internationally recognised Bologna model and to support research training.

As a masters degree, such a course would be recognised under the AQF as a Level 9 qualification. The structure and content of the program developed would determine its potential eligibility for funding under the CGS or RTP.

Sustainability of support for PhD training

The working group is concerned that emerging models may adversely impact the sustainability of the Australian research system. In particular, with increased flexibility and a growing diversity of pathways, the balance between masters and PhD students may potentially shift, impacting on the availability of HDR students to support research initiatives generally. Between the introduction of the hybrid model in 2013 and 2015, Masters by Research enrolments increased more than 300 per cent at Macquarie University but only by three per cent nationally over the same period. While potentially offering a number of research training benefits, the hybrid model could also place undue pressure on the overall pool of RTP funding, resulting in reduced funding for PhD places. This is an issue the Department of Education and Training (DET) will need to monitor, undertaking modelling of and review.

International comparative data shows that while Australia compares well with other OECD countries, in terms of the number of Doctorate holders per capita we are in the top third of OECD nations, which is nevertheless lower than several other advanced economies, including some in Europe, such as Germany. There is little research to determine the optimal number of PhD graduates or the best mix of masters and PhD graduates to meet Australia's labour force needs now and into the future. Between 2006 and 2015, the number of Masters by Research completions slightly increased (6 per cent), while the increase in the number of PhD completions was far greater (52 per cent).

Availability of information and mobility

There are some concerns around the availability of information about pathways to HDR and difficulties for students in navigating the system. In addition, there is potential that an increasing diversity of pathways and variations in entry requirements could impact student choice and mobility. The clarity surrounding HDR entry requirements could be improved, as could the recognition of different pathways by the sector. A student taking one HDR pathway, accepted at one university, may be excluded from entry into HDR training at another university.

While there may be a need to consider this issue further in the future, there is no evidence that current arrangements (e.g. the Higher Education Threshold Standards, Tertiary Education Quality and Standards Agency Act 2011 and consumer law) are inadequate. There is already considerable current action across the university sector to provide students with appropriate information.

Agreed actions

1.1 Monitor new pathways to HDR training, undertake modelling and review the use of RTP funding

DET to monitor and model the impact of new HDR pathways programs on the research training system, including the balance between PhD and Masters by Research places. This will include reporting on enrolments in specific HDR pathways programs, HDR completion numbers and HDR completion timeframes based on the pathways taken by students. Based on the outcomes of monitoring and modelling, DET to review the use of RTP funding in supporting HDR pathways.

Responsibility – DET – ongoing (6 monthly), with first report by July 2018

1.2 Consult on the new CGS postgraduate scholarship arrangements

As announced as part of the Government's higher education reforms, DET will consult universities, students and other stakeholders on the proposed changes to the postgraduate scholarships.

Responsibility – DET – subject to the passage of legislation

Priority Issue 2 – Industry-university collaboration, including placements

Section 2 of the Implementation Plan addresses two goals:

1. To develop mechanisms to increase the levels of HDR engagement with industry¹, to help improve Australia’s performance in industry-university collaboration (Finding 5).
2. To simplify the complex intellectual property (IP) arrangements with universities, which have been identified as a barrier to HDR student placements in industry (Finding 6).

Goal 1

To develop mechanisms to increase the levels of HDR engagement with industry, to help improve Australia’s performance in industry-university collaboration (Finding 5).

Existing initiatives

A wide variety of mechanisms have been introduced by government, the higher education sector and industry to encourage greater business-research collaboration in Australia and increase the levels of HDR student engagement with industry. These mechanisms range from broad, national engagement incentives to structured internships and placement opportunities and numerous other programs and projects of various scales.

Key recent national scale initiatives include:

- the Government’s commitment of \$28.2 million over four years from 2016–17 to expand the PhD internships program run by the Australian Mathematical Sciences Institute (AMSI) through the National Research Internships Program (NRIP)
- changes to research block grant (RBG) arrangements implemented by DET from 1 January 2017 to provide additional incentives for the university sector to engage with industry.

These initiatives build on existing activities that support industry engagement in HDR training, which include:

- Australian Research Council (ARC) programs, in particular, the Industrial Transformation Training Centres scheme, which focuses on training HDR students to interact with industry
- the Cooperative Research Centres (CRC) program, which supports industry-led and outcome-focused collaborative research partnerships between industry, researchers and the community. CRCs are required to undertake an industry-focused education and training program, including a PhD program.

¹ The working group uses a broad definition of industry in line with the definition in the ACOLA Review, which includes all end users of research including businesses, governments, government business enterprises, non-government organisations, not-for-profit groups and community organisations.

In addition, the CSIRO is developing a pilot Industrial PhD program in consultation with universities to increase the number of researchers with the skills to work with and in industry.

Across the university and industry sectors more broadly, there is an extremely wide and diverse range of activity occurring. While it is not possible to provide a comprehensive overview, key existing examples are outlined below.

Universities have implemented a range of schemes of varying scale to support industry-linked PhD training in a range of disciplines. For example, the Australian Technology Network (ATN) Industry Doctoral Training Centre includes training in professional and broad technical skills for PhD students. iPREP facilitates interdisciplinary teams of PhD candidates from Western Australian universities to participate in projects with industry partners to solve a workplace problem. The Industry Doctoral Program offered by the University of Technology Sydney (UTS) Institute for Public Policy and Governance, and the Graduate Research Industry Partnership (GRIP) program offered by Monash University are further examples demonstrating the disciplinary range covered by university HDR programs.

Individual businesses and organisations also offer a wide variety of HDR placement programs, student competitions and industry scholarships that directly support students to engage with industry as part of their training.

These activities are complemented by numerous measures that encourage collaboration more broadly, including by integrating HDR students in end user focused activities. For example, the Department of Industry, Innovation and Science (DIIS) Innovation Connections program, an element of the Entrepreneurs' Programme to raise firm level competitiveness and productivity, links businesses with knowledge providers and research organisations to encourage and assist small and medium businesses to access knowledge, engage with researchers (including HDR students and graduates) and foster innovation through a national network of 21 facilitators with industry backgrounds and guaranteed funding arrangements. Similarly, bespoke programs in the higher education sector connect PhD students with industry leaders, such as the Industry Mentoring Network in science, technology, engineering and mathematics (STEM) initiative delivered by the Australian Academy of Technological Sciences and Engineering.

The *National Strategy on Work Integrated Learning (WIL) in University Education* was developed in collaboration between the university and business sectors, by Universities Australia, the Australian Chamber of Commerce and Industry, Australian Industry Group (Ai Group), the Business Council of Australia and the Australian Collaborative Education Network. The strategy aims to build capacity for universities and employers to engage and could be applied broadly to serve as a model for informing and driving greater industry-university research collaboration in the context of HDR training.

Universities have engaged government and industry in projects to examine barriers to greater and more effective participation in HDR student engagement activities, with a view to identifying best practice approaches. Examples include the Office for Learning and Teaching-funded Successful WIL in Science project and the ATN-led Innovative WIL Models project, undertaken in partnership with Ai Group and the Australian Chamber of Commerce and Industry.

Industry bodies also play an important role in promoting, brokering and facilitating opportunities for industry-focused research projects. For example, to assist in facilitating collaboration, the Ai Group prepared a concise guide to assist small and medium-sized enterprise membership companies in engaging with university students: *Uni students – good news for business*. The guide serves as a resource for businesses seeking to collaborate with universities.

In addition, the Government has begun making changes to improve the collection of industry-university collaboration data, which will provide information on various forms of collaboration in HDR training, and will be used to inform and create increased incentives for engagement.

Under the changes to RBG arrangements, DET will collect industry engagement data for HDR students, which is expected to be implemented in 2018 data collections. This will involve reworked Higher Education Research Data Collection (HERDC) specifications to collect further data on end user engagement as indicated by collaborative research income, and collecting data on HDR industry engagement, if possible, by discipline and industry sector.

Under the National Innovation and Science Agenda, the Government is also introducing a national assessment of engagement and impact of university research to encourage greater collaboration between universities, industry and other end users of research. A national engagement and impact assessment pilot was undertaken in 2017 to inform a full assessment that will be rolled out in 2018. Key engagement indicators included in the pilot assessment were the number of HDR students co-supervised by at least one representative of research end users, and a measure of co-publication with researchers in industry.

Areas for improvement

There is a lack of reliable data on the level, types and effectiveness of industry-university collaboration. Despite the mechanisms and investments made by governments, universities and industry, available data, while subject to a range of limitations, suggests Australia's performance in industry-university collaboration does not compare well with some other countries.

The Review identified an urgent need to improve Australia's performance in collaboration to avoid potential consequences such as:

- lower levels of research commercialisation
- industry missing out on productivity gains
- research not aligning with industry needs
- lower levels of translation of research into practice.

It highlighted the need to improve collaboration and transferable skills development in Australia's HDR training system (the development of students' transferable skills is discussed in detail in '4. Quality of the HDR training system').

Limited data on HDR training participation

Data gaps make it difficult to measure the impact of actions to improve industry-university collaboration. In the context of HDR training, specific gaps in data and information on the level and types of engagement include:

- the number and proportion of HDR students engaging with industry during their training, at both a system and discipline level
- the extent of involvement of industry partners in HDR training, at both a system and discipline level.

Lack of information for students and industry

Better information is needed by both industry and universities on how to initiate engagement to support collaboration in HDR training.

There is often a tendency for discussions on industry-university collaboration in HDR training to focus on internships and placements, although there is a much broader range of HDR student industry engagement that occurs. Industry placements can be a reason that students choose a particular course. However, there is no consolidated or comprehensive information for students on the industry engagement opportunities available.

The ACOLA review found a lack of industry awareness of the benefits HDR candidates could bring to their organisation, how funding for HDR training works, what would be involved in developing a research training collaboration opportunity and who to approach to establish such an arrangement.

Agreed actions

2.1 Principles to guide industry-university collaboration in HDR training

ACGR and Ai Group to work together to develop and disseminate complementary principles that build on the range of available models of industry engagement in HDR training, including:

- principles for university collaboration with industry in HDR training (for use by universities)
- principles for industry collaboration with universities in HDR training (for use by industry partners).

The principles should promote the short- and long-term benefits of engagement, including the benefits HDR candidates can offer industry, and address issues such as the establishment of clear expectations and protections for all parties, including in relation to IP arrangements.

Responsibility – ACGR and Ai Group, in consultation with universities and industry sector stakeholders – by July 2018

2.2 Promote availability of HDR industry internships and other collaboration

ACGR and Ai Group to encourage their members to promote internships and other collaboration opportunities to students, including by publishing information on their websites.

Responsibility – ACGR and Ai Group – by March 2018

2.3 Monitor implementation of the NRIP

DET to monitor and report to the sector on implementation of the NRIP, including in:

- supporting collaboration
- achieving targets for women and Indigenous student participation
- supporting STEM research.

To support this process, AMSI to report annually on system level issues, in addition to providing regular project reports to DET.

Responsibility – DET, in consultation with AMSI – ongoing, with first report by July 2018

2.4 Establish baseline data and monitor internships and other collaboration

DET to build on existing data collections and processes to establish baseline data on HDR internships and other collaboration.

This would include ongoing monitoring and reporting on the implementation of new RBG arrangements and their impact in supporting greater collaboration.

Responsibility – DET – ongoing (6 monthly), with first report by July 2018

Goal 2

To simplify the complex IP arrangements with universities, which have been identified as a barrier to HDR student placements in industry (Finding 6).

Existing initiatives

The Government, universities, and industry peak bodies have sought to encourage collaboration by addressing some of the difficulties surrounding collaborative IP arrangements.

In 2015, the Government developed *The Australian IP Toolkit for Collaboration* (IP Toolkit), a joint project between the DIIS and IP Australia designed to facilitate, simplify and improve collaboration between researchers and industry and reduce the need for legal advice. The IP Toolkit is designed for collaborations of around \$100,000 or more, while the *Mini Australian IP Toolkit for Collaboration Guide* can be used for lower value and/or less complex collaborations. The IP Toolkit includes a model contract focused on research projects that takes account of students involved in projects, but does not address issues specific to HDR student projects, such as thesis publication. A revised version of the IP Toolkit is currently being developed.

A range of work has also been undertaken by industry organisations to support consideration of approaches to IP by businesses engaging with universities. For example, the National Energy Resources Australia (NERA) publication, *Are You Research Ready?*, aims to assist companies to more actively use Australia's research capability and includes guidance on the considerations involved in IP arrangements in collaborative research.

A number of programs designed to encourage industry-researcher collaboration have contract templates accepted by a number of universities and industries. One example is contained in AMSI's contract template for individual internships under its PhD internship program. The contract vests the project IP created during the internship with the industry partner, and the IP is then licensed back to the university where the intern is enrolled for research and teaching purposes. The university's background IP is licensed to the industry partner for the development of the project IP. This contract has been executed more than 200 times by Australia's universities and their industry partners.

A consistent approach to managing collaborative IP arrangements can give industry partners confidence when negotiating with universities. The ATN National IP Principles, which were launched in April 2016, establish a consistent approach to IP arrangements by ATN universities, outlining principles to promote greater collaboration and commercialisation of university research by reducing complexities and being responsive to industry timeframes and needs. The ATN does not currently provide contract templates.

Areas for improvement

A consistently agreed approach to managing collaborative IP arrangements has not been established. The Review found, through its consultations, that the negotiation of IP issues is a significant barrier to industry partners establishing more HDR candidate placements. The Review also recognised that IP ownership issues arising from collaboration can impede a researcher's ability to publish the results of research.

The *Review of Research Policy and Funding Arrangements* also identified a number of issues including a lack of clarity on IP ownership and inventor rights for students in industry placements or researchers on secondment.

Ai Group's 2016 report, *Joining Forces: Innovation Success through Partnerships* similarly found, through consultations with several businesses, that IP arrangements were a major problem when dealing with some universities. Negotiation of IP agreements can be resource-intensive and heavily contested, and can undermine collaborative relationships. Initiatives by industry can only foster collaboration where universities do not face pressure to maximise revenue from IP generated through collaboration and do not have unrealistic expectations of the willingness of industry partners to accept onerous arrangements.

Agreed actions

2.5 Collaborative IP templates

DET and DIIS to develop and make available templates to inform the development of IP arrangements involving HDR students in collaborative research activities, drawing from existing IP models such as the *IP Toolkit* and the AMSI internship program agreement template. The templates should address issues including:

- establishing trust and pursuing mutual benefit to support more formal commercial boundaries
- identifying and addressing key issues and challenges at the beginning of the relationship
- confidentiality arrangements in the examination of a thesis
- arrangements to allow for the publication of students' research outputs
- agreeing on the commercial potential of the product and likely revenue after all costs have been taken into account.

The templates should be developed in consultation with industry and university stakeholders and informed by the industry-university collaboration principles developed by ACGR and Ai Group under Action 2.1, to ensure they are practical and will be adopted.

Responsibility – DET and DIIS – by mid-2019

Priority Issue 3 – Equity, including Indigenous participation

Goal

To increase participation in HDR training and improve completion outcomes for Indigenous students (Finding 11) and students from other equity groups, including those with low socio-economic status (SES), from regional/remote areas, and women studying in particular disciplines.

Existing initiatives

The Government provides support for living costs through scholarships under the RTP to assist those with limited financial means to undertake study. Under changes to RBG arrangements, which took effect on 1 January 2017:

- the weighting for Indigenous HDR completions in the RTP allocation formula has been doubled
- universities have increased flexibility to determine the duration of tuition fee support and the duration and level of living cost support (stipends) provided through RTP funding, to better support the needs of individual students, including Indigenous students. In 2017, full-time stipends under RTP guidelines range from a base rate of \$26,682 to a maximum rate of \$41,682. Furthermore, under current guidelines, universities may top up RTP stipends by a further 75 per cent².

There is a range of programs that support participation at the undergraduate level by Indigenous students, such as the Indigenous Student Success Program (ISSP), and students from low SES backgrounds, such as the Higher Education Participation and Partnerships Program (HEPPP).

In addition, work is currently underway to implement the Rural and Regional Enterprise Scholarships program, which aims to improve access to and completion of STEM tertiary education courses for students from regional and remote Australia. Scholarships will be available for students across the full tertiary education continuum, from Certificate IV through to PhD courses. The program will support at least 1200 undergraduate, postgraduate and vocational education and training (VET) students to undertake a STEM qualification. Funding for the program is \$24 million between 2017–18 and 2020–21. Scholarship applicants will have the option to study at providers located anywhere in Australia, including major cities. Scholarship recipients will be selected on the basis of need and merit, with priority given to women and Aboriginal and Torres Strait Islander people.

The university sector is working to improve outcomes for all equity groups, with a strong focus on Indigenous students. The UA Indigenous Strategy, released in March 2017, is a key sector initiative to which all universities have signed up. Each university has given a commitment to develop its own Indigenous strategy. As part of these strategies, universities will consider initiatives to better inform Indigenous students of available pathways to HDR and improve recruitment of Indigenous HDR

² Please refer to section 1.5 (2) of the *Commonwealth Scholarships Guidelines (Research) 2017* at https://www.legislation.gov.au/Details/F2016L01602/Html/Text#_Toc461175993

candidates. This may include the employment of officers within universities with responsibility to engage and recruit Indigenous HDR students. Such positions should be held by Indigenous officers.

Individual universities have also established a range of strategies and programs, for example, the Queensland University of Technology Indigenous Research and Engagement Unit's HDR Support program, the UTS Indigenous Education Strategy, and The University of Melbourne Indigenous Student Plan and Indigenous Employment Framework.

The National Indigenous Research and Knowledges Network (NIRAKN), which draws on support from government and other partners in the sector, plays an important role in supporting Indigenous researchers. NIRAKN's Research Capacity Building Program supports opportunities for skill development and collaboration, and comprises external grants and internal grants.

In addition, the industry sector is making an increased contribution to addressing Indigenous disadvantage including through philanthropic support. For example, on 22 May 2017, the Prime Minister announced a donation of \$400 million by Andrew and Nicola Forrest. This philanthropic gift includes \$50 million for Creating Parity, to encourage education, training and employment initiatives that aim to help to remove obstacles in people's lives and end disparity between Indigenous and non-Indigenous Australians.

Indigenous student participation is also supported through a range of other broader initiatives focused on higher education and community engagement and drawing on sector, industry and government support. One example is the Aurora Project's work in Indigenous education, conducted through the Aurora Education Foundation, which provides interconnected education programs, products and services which aim to support Indigenous students to realise their academic potential.

Current capacity to monitor and analyse outcomes for equity groups is limited, particularly Indigenous students, given the low numbers of HDR completions (relates to '5. *Data and evidence to better monitor HDR system performance*'). Nevertheless, there is a range of current initiatives to support this priority, including the Quality Indicators for Learning and Teaching (QILT) Graduate Outcomes Survey, which reports employment outcomes, including salary levels for male and female students at the postgraduate research level by study area, home language and for Indigenous graduates. Although QILT does not specifically report other detailed outcomes for women in certain disciplines (i.e. study area by gender) or regional/remote and low SES students, these data items are available through custom data requests. DET is now also undertaking a longitudinal survey three years from graduation to improve information on outcomes.

Areas for improvement

Low Indigenous HDR training participation rate

In the 2011 Census, 3.09 per cent of the Australian population was Indigenous. However, in 2015 only 1.11 per cent of HDR candidates enrolled in Australian universities were Indigenous, and Indigenous students accounted for only 0.66 per cent of domestic HDR completions.

The Review included a greater focus on Indigenous people in HDR training than on other equity groups. The Review analysed participation ratios for students from different equity groups between

2003 and 2013. While participation levels for most other groups remained flat, they declined for Indigenous people.

Financial stress has been identified as a major contributing factor to Indigenous students not participating in, or delaying their completion of HDR study. In addition, the majority of enrolled Indigenous HDR students are aged 40 years of age and older (over 57 per cent between 2006 and 2015). In contrast, of the total domestic HDR population, 36 per cent of students were in that age group. Indigenous HDR students in the more mature age groups are likely to have parental, caring and community responsibilities which they need to balance with work and study commitments.

Participation rates of other equity groups

The Review found that the other equity groups, notably students from regional/remote areas and low SES background, were also under-represented in the research training system. In 2015, HDR students from regional/remote areas made up 14 per cent of the enrolled domestic HDR student population and those from low SES backgrounds made up 8 per cent. These proportions remained relatively consistent between 2006 and 2015.

Gaps in data and evidence

The low number of Indigenous students and students from other equity groups undertaking HDR studies makes it extremely difficult to analyse data on HDR student retention and completion (broader issues regarding data on student completions are addressed in '5. *Data and evidence to better monitor HDR system performance*'). There are also difficulties in analysing the range of pathways taken to HDR by Indigenous students and students from other equity groups. Further evidence and analysis on barriers to HDR training would be useful, as would evidence on the types of pathways and approaches that support successful completion.

In addition, there is currently no dedicated four-digit Australian and New Zealand Standard Research Classification (ANZSRC) Field of Research (FoR) code for Indigenous research, noting that the term 'Indigenous research' here applies to Indigenous subject matter, not to research undertaken by Indigenous researchers and students. However, being able to better monitor the number of Indigenous HDR students focused on Indigenous research is important in supporting them.

Lack of HDR pathways and employment outcomes information for students

There are also concerns about the availability of coordinated, system-wide information to students on available pathways to HDR (see '1. *Pathways to HDR training*') and on employment outcomes (see '4. *Quality of the HDR training system*') for Indigenous HDR students and students from other equity groups.

Such information needs to be available to Indigenous students and students from other equity groups, with an understanding of their circumstances to effectively support their access to HDR training and assist in increasing participation. Information and evidence are required on successful models, for example, possible case studies that illustrate successful pathways, support mechanisms and employment outcomes.

Limitations on access to part-time scholarships

The Review suggested that financial barriers, parental, caring and community responsibilities can be key obstacles to participation by under-represented groups. As noted above, financial stress and competing responsibilities have been identified as a major contributing factor to Indigenous students not participating in, or delaying their completion of HDR study.

To address these issues, while taking advantage of the increased financial incentives and flexibility to support Indigenous students, universities could consider increasing stipends rates for Indigenous students. Increased stipends for Indigenous students could be achieved by universities using a combination of RTP and other funding sources, as current guidelines allow universities to top up RTP stipends by a further 75 per cent from other funding sources. In addition, universities could also consider paid cultural leave given that a number of Indigenous students are likely to have cultural and ceremonial obligations. In doing so, it is important that universities collaborate with Indigenous stakeholders on the development of these and other policies. DET will work with the university sector to consider the issues in relation to paid cultural leave.

Better access to part-time scholarships may also help to improve access for Indigenous students and students from other equity groups, who are more likely to study part-time. In 2015, 40 per cent of the Indigenous students, 42 per cent of low-SES students and 47 per cent of regional/remote students were part-time, compared to 31 per cent for the broader HDR population. Current arrangements, whereby scholarships are generally offered on a full-time basis and part-time stipends are taxed when combined with other income, may discourage people from these groups, particularly Indigenous students, from participating in HDR programs. To address these issues, there have been calls from DET, the sector and the working group for these arrangements to be reviewed, including through the current Australian Taxation Office (ATO) review of advice on the tax treatment of scholarships. It will be important for DET to continue to monitor and pursue improvements to taxation for part-time scholarships.

Gender equity

In terms of overall gender equity, there remain low numbers of women in academic positions in certain disciplines (e.g. STEM, Economics). This is likely to also affect the number of women enrolling in undergraduate and HDR programs in those disciplines. There are similar issues relating to lower numbers of men participating in certain disciplines.

Agreed actions

3.1 Better data collection, and monitoring and analysis

DET to:

- explore improvements to data reporting to support a better understanding of Indigenous student participation in the HDR system, including the pathways taken to HDR, access to scholarships and completion rates.
- monitor and undertake further analysis of the issues surrounding participation rates of other equity groups, particularly of low SES backgrounds and from Regional/Remote areas.

- explore the development of a four-digit ANZSRC FoR code for Indigenous research, including lower cost options that do not require a broader review of all FoR codes (noting that the term Indigenous research here applies to Indigenous subject matter, not to research done by Indigenous students).

Responsibility – DET to explore with relevant government agencies and sector stakeholders – by end 2018

3.2 University Indigenous strategies and promotion of best practice

As part of their existing work to implement UA's Indigenous strategy, UA and ACGR to work collaboratively with Indigenous stakeholders to support implementation of strategies by universities and disseminate information on best practice models, drawing on the experience of institutions that are achieving the best outcomes, including in the following areas:

- better information for Indigenous students on pathways to HDR and strategies to engage and recruit Indigenous HDR candidates, including networking and sharing of resources where universities have very low numbers of Indigenous students
- training for supervisors on how to support Indigenous students including promoting a better understanding of Indigenous research methodologies
- supporting the role of Indigenous academic staff and professors in implementation of university strategies, including the appointment of Indigenous research-only professors.

Responsibility – UA and ACGR, in consultation with the National Aboriginal and Torres Strait Islander Higher Education Consortium (NATSIHEC) and NIRAKN – by mid-2018

3.3 Indigenous PhD forum

DET and UA to explore establishing an Indigenous PhD forum to focus on enablers and barriers to Indigenous HDR participation and outcomes for Indigenous HDR graduates, in consultation with NATSIHEC, NIRAKN and Indigenous HDR students.

Responsibility – DET and UA, in consultation with NATSIHEC, NIRAKN and Indigenous HDR students – by July 2018

3.4 Monitoring and reporting on scholarship support

DET to monitor changes in scholarship support and encourage improvements in access for Indigenous students and other equity groups:

- universities will be asked to report on levels of stipend support for Indigenous students
- DET will monitor and analyse access to part-time scholarships for equity groups and related developments with the ATO Review of Advice on Scholarships
- DET will publish the outcomes on an annual basis.

Responsibility – DET and universities who choose to participate – by 2018 academic year

Priority Issue 4 – Quality of the higher degree by research training system

Section 4 of the Implementation Plan addresses three goals:

1. To encourage and enable the benchmarking of Australian research training against appropriate international comparators (Finding 8).
2. To embed transferable skills training strongly in our research training system (Finding 4), and ensure that formative and summative assessment regimes in graduate research programs align with the aims of contemporary HDR training and appropriately assess both the thesis and the transferable skills attained during candidature (Finding 9).
3. To promote consistent and high quality research supervision (Finding 10).

Goal 1

To encourage and enable the benchmarking of Australian research training against appropriate international comparators (Finding 8).

Existing initiatives

Better data collection on student outcomes is being addressed by DET through activities such as QILT and the Higher Education Student Data Collection (HESDC) (see *'Section 5. Data and evidence to better monitor HDR system performance'*). These instruments provide a good basis for comparison within Australia and could potentially contribute to international benchmarking.

QILT collects:

- Graduate Outcomes Survey, which includes surveys of graduates four months and three years from graduation.
- Postgraduate Research Experience Questionnaire (PREQ), which measures the experience and satisfaction of HDR graduates with HDR training. The Government has commissioned the Australian Council for Education Research to undertake a review of the PREQ. The final report is expected in July 2017.

Under the HESDC, DET collects data on student enrolments and completions, courses and areas of study.

University policies provide a level of assurance that Australian HDR graduates can create new knowledge at an international standard. Many universities in Australia regularly use international examiners for HDR assessment, ensuring that the outputs of Australian HDR training are under constant international review.

Areas for improvement

While several Australian universities report varied approaches to compare elements of their research training activity internationally, there is no comprehensive or consistent approach.

The proposed changes to HERDC reporting will provide national and institutional data on completion times and levels of industry engagement. However, care will be needed if using this for international benchmarking against results which arise from different national systems and funding regimes.

There are existing international benchmarking instruments and models that could be more widely adopted within Australia. The Monash Graduate Research Experience Survey (GRES) has been modelled on the United Kingdom (UK) Postgraduate Research Experience Survey (PRES), itself originally derived from the PREQ and modified for UK conditions. Monash can benchmark its graduate research experience against the 123 UK institutions that participate in this survey in a similar graduate research system. A similar approach could be taken by developing a national current student experience survey, including institutional specific questions, with an appropriate set of consistent bio-demographic fields to enable national and international comparative analysis.

Agreed actions

4.1 Revised Student Experience Survey

Subject to available resources, DET to explore opportunities to expand the current review of PREQ to include the establishment and funding of a survey of current postgraduate research students to support comparison with similar surveys used overseas, such as the UK PRES for international benchmarking purposes.

Responsibility – DET – by July 2018

Goal 2

To embed transferable skills training strongly in our research training system (Finding 4), and ensure that formative and summative assessment regimes in graduate research programs appropriately assess both the thesis and the transferable skills attained during candidature (Finding 9).

Existing initiatives

Development of transferable skills

The Review recognised that many universities have already made significant investments in transferable skills development. A wide variety of programs have been established, or are currently being developed, tailored to suit the varying demographics of the HDR cohorts across the sector.

Some programs are mandatory, for example the University of Adelaide, Career and Research Skills Training (CaRST) program and the James Cook University Professional Development Program, whilst others are optional and/or incentivised, such as the University of Queensland Career Development Framework and the University of New South Wales Academic Career Development Framework.

The Monash University Doctoral Program contains three different modes determined by faculty and/or program: professional development, coursework or industry partnership. The ATN's e-Grad School online platform provides member universities with a convenient way to offer transferable skills development to their candidates through formal training and coursework.

In response to the Review, the ACGR have revised and expanded the Good Practice Principles on Graduate Research Candidate Development, which states that graduate research candidates are supported to undertake original research and scholarly activities whilst developing key research and employability skills for academic and non-academic careers.

These principles and the other Good Practice Principles have been promoted as reference points for the Tertiary Education Quality and Standards Agency (TEQSA) Higher Education Standards Framework section on Research Training. Inclusion of statements relating to skill development in these Principles is a critical element of the national strategy to encourage and monitor research training quality through the TEQSA institutional review process.

Assessment and recognition of transferable skills

Assessment, both formative and summative, should occur regularly throughout the HDR program. Examples of good practice currently undertaken at many universities include:

- initial research training and professional development needs analysis and assessment early in candidature (in the first 6 months, ideally first 3—4 months), which then informs the planning of coursework and additional training requirements
- regular formative assessment of the progress and quality of the research, involving a panel which includes members independent of the supervisory team
- robust assessment commensurate with AQF Level 9 and Level 10 learning outcomes for all formal coursework undertaken as part of the HDR program
- a final pre-submission review of the research to be examined by a panel which includes members independent of the supervisory team
- an oral component of the final examination of the research.

Under current practice in many universities, candidates are encouraged and sometimes required (as a fulfilment of milestone requirements, for example) to present their work-in-progress at internal research seminars, and are supported in both presenting their work at external conferences and through publication. These processes provide further valuable assessments and peer review of the work and opportunities for candidates to demonstrate and hone their skills in communication, presentation, and scholarly debate.

A number of institutions have policy provisions for oral components in examinations in particular fields (usually creative practice). However, more recently, several institutions have moved or are signalling the move to mandating an oral component for all PhD thesis examinations.

Areas for improvement

The Review recognised that the skills gained by a doctoral graduate, as set out in the AQF, align closely with the skills desired by employers. It was also noted that as HDR graduates statistically have good employability and salary levels, it appears they are generally equipped with the skills they need for employment.

Issues to address are employers' poor familiarity with what research training entails and the lack of accessible means for graduates to communicate their abilities effectively. The development of a set of national guidelines on skills development, assessment and recognition would help to address this. In particular, such guidelines should inform an approach to creating institutional statements of capabilities, using standard language to communicate to prospective employers the skills and attributes that HDR graduates developed through research training. Such statements would allow for institutional interpretation and recognise that the variation and diversity of program delivery between Australian universities is a strength and feature of our system.

The ACOLA Review referenced the Vitae Researcher Development Framework. However, there is a view in the sector that this instrument is too complicated and prescriptive, and that a national prescriptive statement of skills or a universal model of skills delivery is not desirable.

Finally, there is a need to define institutional and individual responsibilities for the assessment of individual candidates' skill development. This could be addressed by making direct reference to graduate capabilities in the AQF and/or the research training element of the Higher Education Standards Framework.

The AQF requires that PhDs and Research masters, as research degrees, must be passed on the basis of the research output. However, there is an increasing onus on the professional development of the researcher and clarity is required on the mechanisms by which skills developed throughout candidature are subsequently assessed. In particular, greater national consensus is desirable in relation to the place of oral and written examination in the assessment process.

There would be benefit from universities implementing the following mechanisms to better develop, assess and recognise HDR students' transferable skills:

- clear statements of the capabilities of HDR graduates, informed by national guidelines on skills development for audiences both within and outside academia, including potential employers
- recognition of students' extra-curricular activity for skills development (for example work experience, industry placements) in academic transcripts
- formalised sharing of training modules to improve productivity, manage costs and allow students to access other intellectual climates
- policies that explicitly state how the students' 'skills' and attributes are monitored and assessed during candidature and define the consequence of this assessment, particularly any potential impact on the award (or non-award) of the degree

- where there is no oral component of HDR examination, universities should normally institute a formal milestone or hurdle requirement for an oral presentation prior to the submission of the thesis
- utilise the Australian Higher Education Graduation Statements (AHEGS) to document all formal coursework attainments in addition to the research component of the HDR in as much detail as possible
- encouraging HDR candidates to document their acquisition and refinement of key capabilities through e-portfolios or other means facilitated by their institution, and support candidates through Careers and Employment Services within their institutions to craft curricula vitae which express and communicate these capabilities clearly to a wide audience.

Agreed actions

4.2 National guidelines on the development, assessment and recognition of transferable skills

ACGR to develop a set of guidelines that define principles and the rationale of skills development, assessment and recognition, which are not too prescriptive.

Responsibility – ACGR – by end 2018

Goal 3

To promote consistent and high quality research supervision (Finding 10).

Existing initiatives

The Australian higher education sector has done much to improve the quality of research supervision by way of professional development and training, supervisor registration and accreditation systems, and performance management of research supervisors.

Most institutions manage some form of supervisor policy and register, which details eligibility to supervise and manage the supervisory loads of staff. Twenty-one institutions currently monitor supervisors' completion history and outcomes and another 10 have the capacity to do so.

Supervision training is provided at most institutions and mandated at many. Models of delivery include mandated orientation, foundation level training for all new primary supervisors and master class (or communities of practice) for experienced supervisors who seek to support greater numbers of students.

HDR supervision is also recognised as a selection criterion in some ARC schemes, including the Industrial Transformation Training Centres, Australian Laureate Fellowships and Future Fellowships. The potential to include similar selection criteria in other ARC and National Health and Medical Research Council schemes could be explored further.

ACGR has developed Good Practice Principles for Research Supervision and, complementing recognition in place in some institutions, has recently introduced national awards for Excellence in Graduate Research Supervision.

Areas for improvement

More can be done to address gaps in the assurance of high quality research supervision, particularly ensuring that performance measures are mainstreamed into individual staff performance reviews and promotion criteria.

The ACOLA Review recognised the critical role played by HDR supervisors in expanding transferable skills training as well as encouraging and mentoring industry engagement. To ensure that HDR supervisors fully recognise and support transferable skills development, this should be built into academic performance expectations.

The ACGR Good Practice Principles for Research Supervision would benefit from a refresh in light of the Review's findings and the emphasis on greater industry engagement.

Agreed actions

4.3 Refresh Good Practice Principles for Research Supervision

ACGR to refresh the Good Practice Principles for Research Supervision to include increased focus on the development of students' skills and attributes to reflect the aims of contemporary HDR training to equip students with employability skills and experience. (This action also relates to 'Section 3. Equity, including Indigenous participation').

Responsibility – ACGR – by March 2018

4.4 Better address HDR supervision responsibilities in academic performance expectations

ACGR to develop guidelines to support universities to better manage and reward performance at the institutional level, including:

- formal inclusion of monitoring of research supervision performance in performance reviews
- the development of metrics to inform regular performance reviews and other processes such as academic promotion
- clear processes for de-registration of supervisors who consistently fail to meet performance expectations
- reviewing university career structures and academic promotion processes to appropriately recognise industry engagement as well as traditional scholarly outputs.
- reviewing supervision registration processes and levels to appropriately recognise industry engagement as well as traditional scholarly outputs by HDR candidates.

Responsibility – ACGR – by July 2018

Priority Issue 5 – Data and evidence to better monitor higher degree by research system performance

Goal

To improve data collection to enable better monitoring and evaluation of the performance of the research training system, its value to Australia’s economic and social wellbeing, and to inform the development of institutional performance incentives (Finding 7), as well as improving the information available to candidates in making decisions about HDR training (Finding 1).

Existing initiatives

In response to the increased flexibility introduced under new RBG arrangements, DET is making changes to collect information regarding students’ HDR completion timeframes, the active time spent on their HDR, the overall effort invested, extent of engagement with end users of research and the FoR for HDR. In exploring better ways to collect data, the Government is considering how to avoid increased burdens on the sector.

All universities will be required to report Commonwealth Higher Education Student Support Numbers (CHESSN) for all domestic RTP students from 2018 (for the 2017 calendar year). This will enable tracking of completion rates for domestic HDR students at different universities and help to identify areas for improvement.

These data improvements will be implemented in the HESDC managed through the Higher Education Information Management System (HEIMS). Any technical implementation issues will be resolved through existing HEIMS consultation processes and related technical working groups.

The Government’s Engagement and Impact Assessment (to be fully implemented in 2018) will collect and provide useful data on the research system. The pilot assessment undertaken in 2017 included a measure of HDR co-supervision by research end users.

The QILT website (www.qilt.edu.au) provides data and information on institutional performance to assist students to make informed decisions about their study options. QILT information is based on the following surveys:

- PREQ, which measures the experience and satisfaction of HDR graduates.
- Graduate Outcomes Survey, which examines labour market outcomes of newly qualified higher education graduates.
- Employer Satisfaction Survey, which assesses the generic skills, technical skills and work readiness of recent graduates.

Aggregate level data is released in research reports on the QILT website (www.qilt.edu.au). However, the relatively small number of survey responses collected from HDR graduates makes publication of results at disaggregated level by institution by field of education/research challenging.

Areas for improvement

There is a great deal of data and information routinely collected by Government and the higher education sector that could be used more effectively to inform a deeper understanding of the performance of a variety of aspects of the research training system. As Australian universities are autonomous bodies responsible for managing quality through internal accreditation processes and codes of practice, they independently determine their data collection methods for those data not subject to Government requirements, for example, under the Higher Education Support Act 2003.

DET collects a limited sub-set of HDR system data as a consistent national dataset through HEIMS, as provided under the Higher Education Support Act 2003. While there would be potential value in broadening this data collection to improve consistency across the sector and support a more coherent understanding of the system, this must be balanced against the need to manage the administrative burden for universities.

Tracking students/completions

Some targeted improvements could assist in improving capacity to track and monitor outcomes for students. Data on HDR completion rates and timeframes have previously been collected in such a way that it is difficult to determine and compare national and state/territory trends.

The ability to track HDR students through the system, from undergraduate study or other HDR pathways, through their destinations after HDR training (e.g. employment outcomes, different industries or sectors) has recently been improved through the allocation of a CHESSN to domestic HDR students. While the Government has taken significant action to address this, data gaps remain.

While reporting CHESSNs for domestic RTP students will be mandatory from 2018, it will remain voluntary for other domestic students and for international students. In 2015, domestic students supported under the Research Training Scheme (which has since been replaced by the RTP) represented around 60 per cent of the total HDR student population. Extending mandatory CHESSN reporting to international students receiving support under the RTP, and more strongly encouraging CHESSN reporting for all HDR students who do not receive RTP support would greatly improve the ability to track completion rates and enable better monitoring of the performance of institutions and the HDR system overall.

Cohort study methodologies provide an opportunity to track and analyse the progress of specific groups of students through the HDR training system from commencement. This is in contrast to a more common current approach of cross-sectional studies. Cohort or panel studies will provide valuable opportunities for institutions to monitor their own performance and support the development of government and university interventions to improve successful HDR completion and graduate outcomes. The development of a cohort study methodology to apply across the HDR training system would require consideration of:

- required changes to existing data collection methodology, including how the studies would draw from data held by the sector and government
- additional data required from universities to supplement government held data
- additional resource burdens on DET and universities

- primary responsibility for undertaking and reporting on the studies.

Agreed actions

5.1 Prospective cohort studies

DET to develop a methodology to undertake cohort studies, subject to funding availability, drawing on consultation with relevant experts in the sector who have undertaken such studies.

Responsibility – DET, in consultation with relevant sector experts – by April 2019

5.2 Expanding CHESSN reporting

Subject to legislative and other implementation requirements, extend mandatory CHESSN reporting to international HDR students receiving support under the RTP, and encourage universities to also collect and report CHESSNs for all HDR students not supported through the RTP.

Responsibility – DET – by end 2018

5.3 Best practice guidelines on tracking HDR students

ACGR to develop guidelines on best practice for universities in tracking HDR students through the system and after they graduate to support better data collection and information on student outcomes by institutions.

Responsibility – ACGR – by end 2018

Appendix A: ACOLA Review of Australia's Research Training System— Findings

Finding 1

Universities have a duty of care to communicate the likely outcomes of Australian Higher Degree by Research (HDR) training prior to candidates commencing their training. The information currently available to aspiring candidates is inadequate. Candidates need to be provided with information on the career outcomes of past HDR graduates, as well as comparative information on the quality, performance and components of HDR training provided by each university. The Quality Indicators for Learning and Teaching website provides a potential opportunity to communicate this information to candidates in a clear and effective way.

Finding 2

Current regulatory and funding arrangements limit the development and uptake of innovative and internationally recognised entry pathways to HDR training. Flexibility in the current funding structure would allow universities to develop new accessible entry pathways which better prepare candidates for HDR training, such as a for-purpose HDR training coursework masters degree.

Finding 3

The disparity in length of the Australian Postgraduate Award (APA) and International Postgraduate Research Scholarship (IPRS), and the expected length of research doctoral programs causes financial stress for some candidates at the end of their HDR training. The value of awards and scholarships for candidates needs to remain competitive to attract the best and brightest candidates to HDR training. Providing universities with the flexibility to use their allocation of HDR training funding to extend scholarships to four years, and where necessary provide scholarship top-ups, would help resolve these issues.

Finding 4

Broader transferable skills development is a necessary aspect of HDR training. Although many universities have made significant investments in this area, transferable skills development is not as strongly embedded in our research training system as it is in some other comparable research training systems around the world. Skills development must be flexible and candidate-directed, and take into account the diverse backgrounds and experience of candidates. The United Kingdom Vitae Researcher Development Framework is an established and comprehensive approach that provides a useful model that could be adapted for use in Australia.

Finding 5

Australian industry-university collaboration performance lies close to bottom in terms of the international comparators reported by the Organisation for Economic Cooperation and Development (OECD). Industry-university collaboration would be greatly improved if there was increased engagement at the HDR level. Australia should be aiming for its level of industry-university

collaboration during HDR training to be in the top 25 per cent in the OECD, and further research will be needed to determine appropriate indicators of this benchmark. Increased industry engagement will require a greater proportion of HDR training opportunities to be focused on an industry-defined research problem, take place in industry settings, or involve an industry supervisor for the project. Funding mechanisms should be used to drive the significant change required.

Finding 6

HDR candidates benefit from industry placements, and there would be value in building a national industry placement scheme of significant scale and scope through a national coordinating body. No such at-scale Australian placement system currently exists, although there are several small-scale, unaligned schemes. Other countries have been successful in developing large-scale industry placement systems, from which Australia can learn international best practice. Placements should not be mandated, but every HDR candidate who wishes to undertake a placement should be encouraged to do so. Placement schemes must balance the interests of HDR candidates appropriately with their industry partners and enhance the HDR training program. Complex intellectual property arrangements with universities are a barrier preventing prospective industry partners from providing HDR placements. A national approach to HDR industry placements could help to address this problem by developing a simple, uniform default approach to intellectual property arising from placements, in which industry partners retain ownership.

Finding 7

Currently available data is inadequate to determine the performance of the research training system and its value to Australia's economic and social wellbeing. Longitudinal data on HDR course satisfaction, course completions and career outcomes needs to be collected and reported in a nationally consistent and statistically robust fashion. The absence of this data prevents effective performance monitoring and evaluation and the development of institutional performance incentives. Data gaps could be filled by making changes to some existing data sources and collector methods, exploring opportunities associated with administrative data linkage, and introduction of a specialised fit-for-purpose longitudinal survey. Research training system performance data should be longitudinal, reported by institution and discipline at the two- or four-digit field of research level as appropriate, and used to drive performance improvements as well as aid prospective HDR candidates in making decisions about HDR training.

Finding 8

HDR training could be improved by institutions benchmarking their HDR training against that offered by institutions with outstanding international reputations. This benchmarking should be undertaken at the four-digit field of research level.

Finding 9

The current examination system ensures Australia's HDR outputs are of high quality, but a statement of the skills and knowledge gained by the candidate is also needed. The Australian Higher Education Graduation Statement provides a potential vehicle for such information, the evidence base for which can be built through HDR milestones (confirmation of candidature, mid-candidature, and final),

preparation of a skills portfolio, seminar presentations, industry and international placements, and oral examinations.

Finding 10

Universities have a responsibility to provide ongoing high quality HDR supervisory training, and a responsibility to act where supervisory performance falls below expected performance levels. Outstanding HDR supervision should be recognised and reinforced by universities through the application of professional standards and rewards for performance.

Finding 11

Indigenous researchers have much to offer the nation and their communities, but participation by Indigenous candidates in HDR training and employment of Indigenous people remains low. Targets and specific measures, such as increased weighting for Indigenous HDR completions through the Research Training Scheme block grant, have the potential to acknowledge the value to the nation and the universities of Indigenous participation in HDR training. Incentives are also needed to support the training of Indigenous HDR candidates such as higher value stipend scholarships and real-wage competitive fellowships. To ensure accountability, performance outcomes of targets and measures should be regularly reported. Increasing Indigenous participation in HDR training will require the pipeline of Indigenous high school and undergraduate students to be strengthened. Providing a welcoming, supportive and culturally safe environment, including culturally competent and high quality supervision, would help to create a positive university experience for Indigenous HDR candidates.

Appendix B: ACOLA Review of Australia's Research Training System— Recommendations

Recommendation 1

The Government should support the establishment of a sector-wide implementation working group, tasked with developing within six-months a specific and actionable implementation plan with measures relating to the three broad categories of reform identified by this Review (regulation and policy, university cultural change, and industry incentives/cultural change). This working group should have an independent chair (appointed by or negotiated with the Government), with a requirement for high-level representation from relevant stakeholder groups (universities, industry bodies, research organisations and institutes, government and higher degree by research (HDR) candidates) to ensure broad consensus on the final plan. This working group would also be empowered by strong links with Innovation and Science Australia.

Recommendation 2

The Government should remove the regulatory and financial barriers that prevent universities from developing accessible entry pathways to HDR training and offering flexible scholarships of appropriate duration and value.

Recommendation 3

The Government should implement Recommendation 4 from the review of research policy and funding arrangements to provide additional funding to incentivise industry-university collaboration, with a particular focus on initiatives that connect HDR candidates with industry-led research problems.

Recommendation 4

The Government should implement Recommendation 11 from the review of research policy and funding arrangements to develop a national program to support industry placements for Research Doctorate candidates. The successful Canadian Mitacs program would be a useful template for developing an Australian scheme, and it will be imperative to learn from and engage with existing Australian schemes. Over time, the national scheme should be expanded to be accessible to all HDR candidates who wish to participate.

Recommendation 5

The Government should institute a longitudinal national data collection exercise to monitor course satisfaction, course completions and career outcomes for HDR training.

Recommendation 6

The Government should institute increased weighting for Indigenous HDR completions in the Research Block Grants formulae, and flexibility in scholarship guidelines to allow for higher value stipends and real wage fellowships to further encourage Indigenous participation in HDR training.